

The HCA National Disease Management Program for Coronary Disease Detection and Treatment in Women

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The diagnosis and treatment of heart disease in women continues to be one of the greatest challenges facing cardiovascular medicine today. Marked reductions in mortality rates during the past 2 decades did not result in improved outcomes for women. A major rate-limiting step to improving mortality rates for women is early diagnosis and initiation of effective lifesaving therapies for women. In 1999, HCA Healthcare Systems, Inc, Nashville, TN, initiated a coordinated effort among 208 hospitals in 26 states to improve the diagnosis of coronary disease and to target women who should receive aggressive risk factor modification and referral to cardiologists. We describe the initial phases of program development, including employee risk-factor screening; citywide health risk assessment; nationwide educational programs for clinicians, staff, and consumers; and a dedicated outcomes assessment program for tracking women at risk for coronary disease. We believe that these efforts provide a venue for optimal care and improved outcomes for women served by HCA facilities.

(Am J Manag Care 2001;7:SP25-SP30)

The diagnosis and treatment of heart disease in women continues to be one of the greatest challenges facing cardiovascular medicine today. Despite the abundance of evidence to the contrary, there still remains an encompassing belief on the part of consumers and clinicians alike that heart disease is a male disease.¹ Marked innovations in new technology and available therapies for coronary artery disease (CAD) have resulted in 33% to 50% reductions in mortality in the United States during the past 2 decades²; however, white male patients realized most of this benefit.¹ As a result, CAD remains the nation's leading killer of women. Despite the perceived greater risk for cancer, in 1996, more than 500,000 women died of cardiovascular disease and its associated conditions, whereas 43,000 died of

breast cancer and 62,000 died of lung cancer. Since 1994, approximately 50,000 more women than men have died of cardiovascular disease (Figure 1).¹ Recent estimates reveal that the highest mortality rates for cardiovascular disease in women are in the southern United States.³ Because HCA Healthcare Systems, Inc, Nashville, TN, facilities are located in 26 states, 12 of which are in the southeastern part of the United States, we believe that major improvements in outcome could be realized by focusing programs for improving risk factor detection and screening for CAD on women served by HCA hospitals.

A major rate-limiting step to improving mortality rates for women is early diagnosis and initiation of effective lifesaving therapies for women. A compilation of evidence across an array of medical and surgical interventions suggests that therapies can be equally effective in improving long-term outcomes in women and men alike.⁴⁻⁶ Despite the outcome benefit, multiple studies have documented underuse of cholesterol-lowering agents, aspirin, thrombolytics, β -adrenergic blocking agents, and heparin in at-risk

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Support for this project was provided by HCA the Healthcare Company, Nashville, TN.

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women.³ In addition to undertreatment, underdiagnosis has been reported for women with acute coronary syndromes, as have reduced rates of coronary angiography in women with abnormal noninvasive test results compared with their male counterparts.^{4,7}

National standards for screening and treatment of CAD are largely driven by symptom presentation.^{8,9} This mode of evaluation might selectively exclude women whose presentation is atypical and underdiagnosed.³ As the risk of CAD equalizes in men and women by age 70 years, evidence suggests that we might not be screening the appropriate women.³ Because half of all women who undergo cardiac catheterization have normal coronary arteries, the question requiring further study is: Are we screening the right women?^{10,11} Furthermore, the women who are screened might be the sickest women, with substantial comorbidity, and those who are less than optimal revascularization candidates.^{4,5} It is therefore possible that a total paradigm shift in screening should be developed. Additional questions worthy of further investigation at HCA healthcare facilities include: (1) Can we devise an optimal disease management strategy? and (2) What are the target populations?

components.^{12,13} From the initial description of this simple model nearly 3 decades ago, there has been an evolution in thought regarding the design and evaluation of quality healthcare. Recently, disease management programs have been advocated as a means to integrate evidence-based medicine within healthcare processes, namely, the integration of peer-reviewed published literature into a nonrestrictive pathway of care.¹⁴ In this increasingly complex world of new technology and therapies, disease management strategies are considered one method for disseminating information and managing its flow to consumers and clinicians alike.¹⁵

Disease management programs have been developed as an integrated multidimensional and multi-specialty approach to care for illnesses that encompass a high degree of variability in both outcomes and cost.¹⁶ For this reason, disease management strategies are frequently developed for coronary heart disease and associated risk factors (eg, hypertension and diabetes mellitus).¹⁷ Disease management strategies commonly target unique patient cohorts, such as the elderly or women.^{18,19} In the case of coronary heart disease in women, effective screening and management must consider multidisciplinary care teams that include family practitioners and general internists as well as cardiologists and gynecologists.²⁰ The goals of a disease management program are to improve resource allocation (or at least to minimize variability in resource intensity) and to improve patient and physician education, resulting in an optimal therapeutic benefit in an array

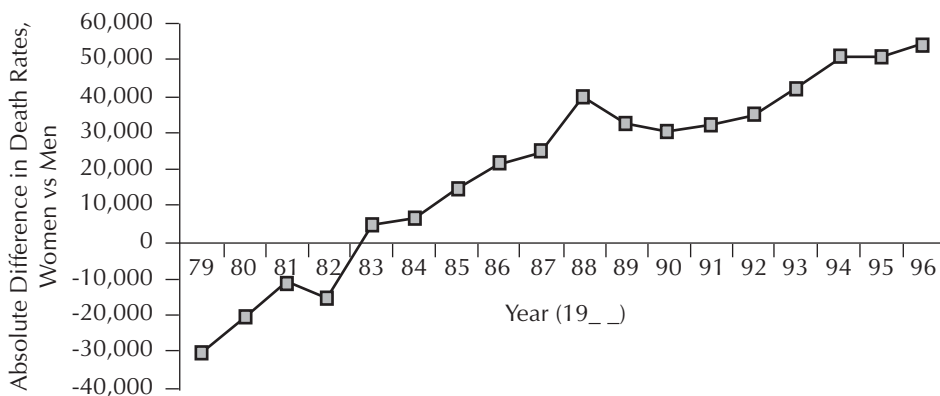
of patient outcomes (including therapeutic compliance, improvement in symptoms, and reduction in mortality).^{21,22}

Key components of any disease management program include not only design and implementation but also mechanisms for tracking program effectiveness and patient outcomes.¹³ Disease management programs also use healthcare economics and clinical outcomes, predominantly the interactive relationship and defin-

... DEFINING DISEASE MANAGEMENT PROGRAMS ...

The quality of healthcare has been defined as encompassing structural, process, and outcomes

Figure 1. Absolute Differences in Coronary Artery Disease Death Rates in Women vs Men*



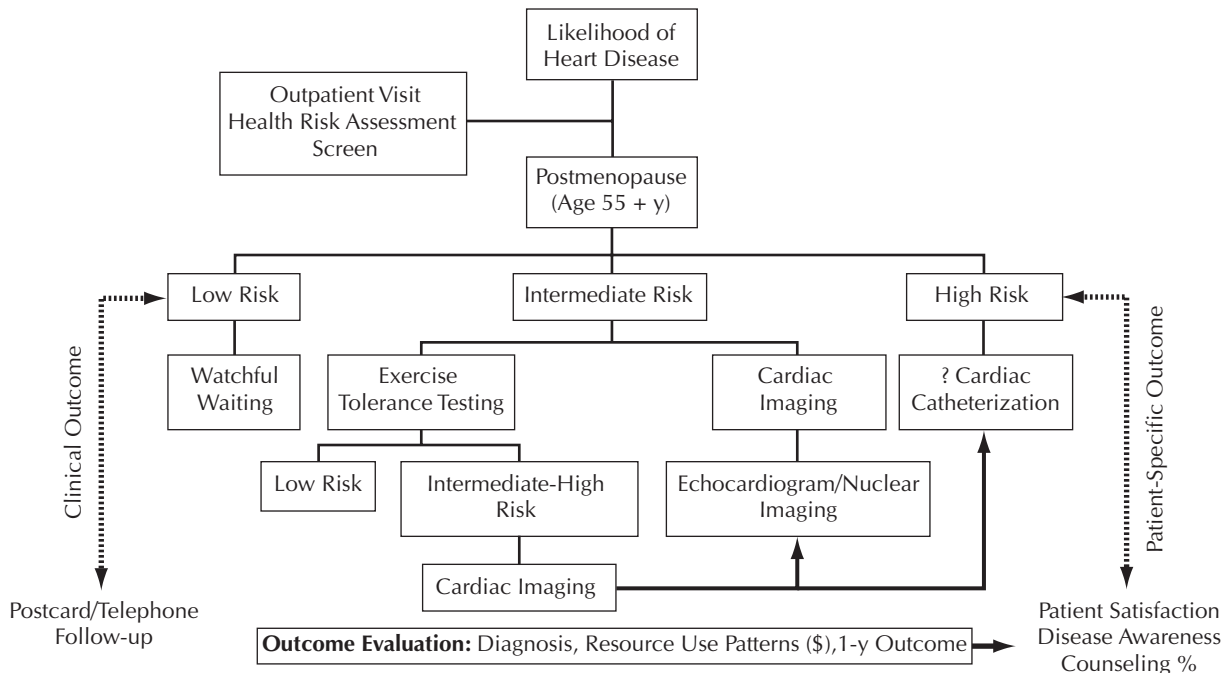
*Beginning in 1983, women had more deaths. Dramatic declines occurred in death rates in men but not in women. Source: CDC/NCHA and AHA. □ = Absolute difference (women-men).

ing a balance between competing cost-cutting efforts and high-quality care. Fundamental to the development and use of a disease management strategy is that patient outcomes are optimized only through the application of clinical pathways of care.²³ This concept entails the enfolding of “best practices” into clinical paths of care or defined “algorithms” of care, with the patient’s improved outcome being the “product” of the pathway.¹⁵ Clinical pathways should be developed in which each decision along the clinical workup is supported by research that optimizes patient outcomes. An example of a clinical outcome and resource efficiency-guided pathway is detailed in **Figure 2**, which delineates a screening program based on current American Heart Association/American College of Cardiology standards in which risk factor modification is limited to intermediate- to high-risk patients.²⁴ Based on an individual’s likelihood of having CAD (eg, risk factors and symptoms), initial risk assessment can divide patients into 3 groups based on risk of heart disease: low (eg, no risk factors), intermediate (eg, 1 risk factor, except diabetes mellitus or atypical chest pain), and high (eg, multiple risk factors or diabetes mellitus and typical anginal symptoms).

... CAD DISEASE MANAGEMENT PROGRAMS FOR WOMEN ...

The purpose of the present study was to describe initial phases of the HCA women and CAD management program, including pilot screening in HCA employees and a citywide community-based evaluation of ischemic heart disease risk in women. We also introduce future developments in the HCA women’s cardiovascular disease initiative. The goals of the HCA disease management system for CAD in women are to: (1) assist HCA facilities in improving quality of care provided to women with CAD; (2) improve detection of CAD in high-risk women, including candidates for aggressive risk factor modification and medical/surgical management²³; (3) educate physicians and nursing staff on differences in presentation, diagnosis, and treatment of men and women with cardiovascular diseases; and (4) provide tools and access to programs for specialists and staff to educate primary care physicians and their communities on women and ischemic heart disease. This program could provide an opportunity for improved quality of care for women at risk for heart disease and could engender community

Figure 2. Pathways of Care for Diagnosing Coronary Artery Disease in Women*



*Consistent with Current National Guidelines Set by the American College of Cardiology/American Heart Association²⁴

goodwill at participating healthcare facilities. Furthermore, because women are the gatekeepers for their families' health, making approximately two thirds of all healthcare decisions, we believe that this message could affect improved health for their husbands/partners, children, other family members, and coworkers. Thus, the current program is an opportunity for education, awareness, and intervention.

The current women's health program has several components. There was a general concern on the part of the Department of Quality at HCA about whether all at-risk women were being effectively targeted for heart disease screening. For this reason, we initiated the sampling of cardiac risk factor prevalence in 2 samples. The first part of this program included a pilot testing program that was completed at HCA national headquarters in Nashville, TN. A second phase of the risk factor screening program included citywide screening of risk factor prevalence in the city of Nashville (n = 500,000 households). A continuing portion of this program includes the ongoing development of clinical pathways of care for women at risk for CAD, derived using established national guidelines and organized by a multidisciplinary team of physicians (including emergency physicians, gynecologists, radiologists, and cardiologists), as well as nursing staff and hospital administrators.

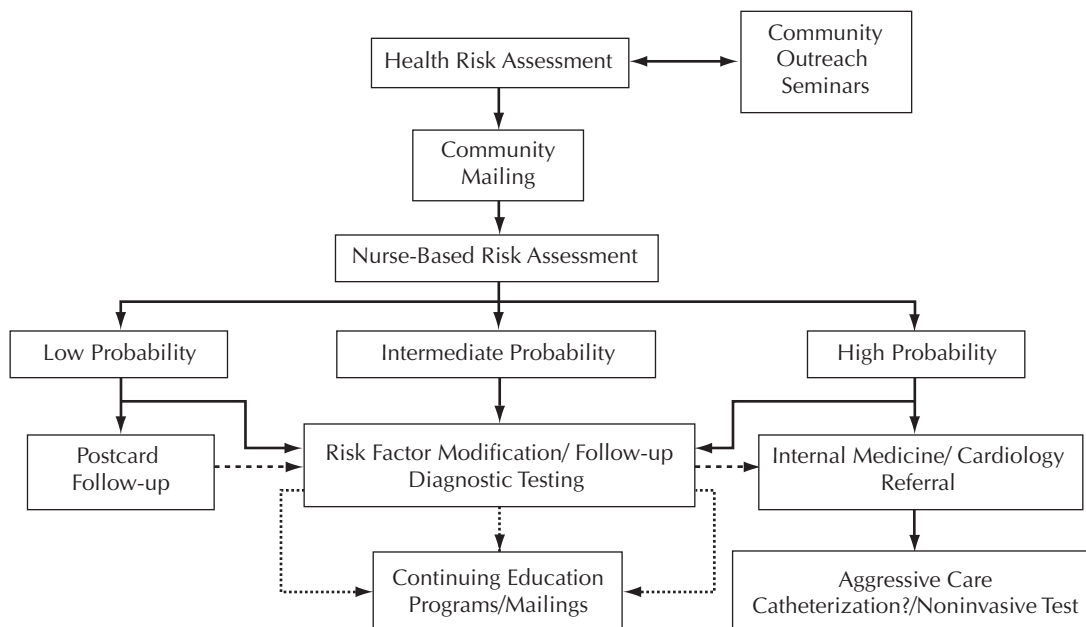
Pilot Testing

In pilot testing, all female employees (n = 950) were informed of the opportunity for risk factor screening at a central location at HCA national headquarters; 408 women underwent screening. All women were given approved time off from work and attended a luncheon/educational seminar. A trained nursing staff screened all female participants in the pilot program. By defining a high-risk female subset as those with 2 or more cardiac risk factors, diabetes mellitus, or evidence of chest pain (or its equivalent), the pilot program found that 12.25% of women would be candidates for aggressive risk factor modification.

Community Screening: Cardiac Risk Factor Prevalence in Nashville

In the first tier of the HCA women and CAD program (Figure 3), we performed community-based sampling by making available a health risk assessment tool in: (1) local newspaper and magazine mailings, (2) local educational seminars on women's health, and (3) general screening in a gynecologist's office. The health risk assessment tool includes a variety of questions on cardiac risk factors, symptoms, and medical history (this questionnaire is available directly from the authors). This tool is a variant of the Framingham risk assessment tool.²³ On completion of the risk assessment tool, a risk algorithm (modified

Figure 3. Population-Based Screening and Education for Improved Education on Heart Disease Risk



from the American Heart Association/American College of Cardiology guidelines) was used to calculate the likelihood of CAD.²³ From the sampling of 500,000 households, a response rate of 2% was ascertained. Based on this initial risk assessment, women who were at high risk received recommendations to seek early medical attention, with consideration of a variety of appropriate diagnostic procedures. Intermediate-risk women received suggestions for follow-up, with a focus on risk factor modification and selective diagnostic testing. Follow-up informational packets on healthcare-seeking advice, risk factor information, and available healthcare services and including the contact telephone number of a registered nurse were provided.

Following this initial tier, women will be contacted within 6 months for tracking of patient outcome and resource use patterns. In addition, this catchment of women will receive periodic mailings to enhance educational awareness of the risk of CAD in women. From the HCA central information system, it is possible to check for inpatient or outpatient bills in addition to a proposed telephone/postcard follow-up to willing respondents. The program will be evaluated by analyzing the proportion of women who seek care from the health risk outreach programs and the number of women who attend community-based educational seminars.

... EDUCATIONAL PROGRAMS ...

During 1999-2000, the HCA healthcare system of hospitals identified local and national experts in the field of women's cardiovascular health. This process was completed through a series of meetings with physicians and clinical staff of the Clinical Cardiovascular Management Network of HCA and included members of medical societies and pharmaceutical industry consultants.

Educational programs were geared toward 2 audiences—clinicians and laypersons. The initial seminars were educational programs for physicians, with the goal of helping them understand the role sex plays in ischemic heart disease. Then, when public educational programs ensue, physicians are equipped with state-of-the-art knowledge on diagnosis and treatment of CAD in women. Programs for clinicians were based on continuing medical education or continuing education units.

The educational programs were instituted in 6 key markets across the HCA system. The public educational seminars largely discussed identification of

cardiac risk factors and the differing symptom presentation in women. The public education formats included health risk assessments and cardiac risk factor screenings.

... CLINICAL PATHWAYS OUTCOMES
EVALUATION STRATEGIES ...

Evaluation of patient outcomes has become central to assessing the effectiveness of various healthcare procedures and programs. Competition in the marketplace for consumers has led institutions to search for alternative market differentiation strategies, including delineation of quality healthcare services. Central to evaluation of healthcare quality is development of clinical standards and guidelines based on health outcomes evidence. This new era of evidence-based medicine is marked by standardized, objective assessments of healthcare quality, in which outcome data play a critical role. Within the hospitalist movement, for example, healthcare is to be restructured around clinical pathways, practice guidelines, quality assurance, risk management, and implementation of continuous quality initiatives to improve patient outcomes. Identifying quality healthcare measures using patient outcome data provides a means to set rational standards for resource consumption. In the absence of outcome data, cost-containment efforts might result in declines in medical services that might affect up-front or downstream healthcare quality. Inherent in efforts aimed at resource use reductions is that quality of patient care will not be sacrificed but that there is a tremendous amount of cost waste within our current healthcare system. Outcome data might be used to define appropriate resource use levels based on clinical need.

... FUTURE APPLICATIONS OF THE
OUTCOME ASSESSMENT PROGRAM ...

A more formal risk assessment program is proposed in Figure 2. The primary outcome of this program will include an array of clinical, economic, and humanistic (quality-of-life) outcomes. Initial selection of at-risk women will be limited to those 55 years or older. Women will be screened during gynecology, family practice, and general internal medicine office visits. An array of educational tools will be made available in each of these office sites. Patients will be asked to complete a health risk

assessment tool in the waiting room. The nurse clinician in each office will review the results of the risk assessment tool, with discussion to ensue with the overseeing physician. Patients will have recommended care based on current national guidelines (Figure 2). In addition to 1-year clinical outcomes, including cardiac death, hospitalization for acute coronary syndrome, development of new or worsening cardiac symptoms, and worsening functional status, patient satisfaction with treatment or testing and with the program will be assessed. A major update to the HCA information system has enhanced our abilities to readily obtain clinical outcomes data. Routine epidemiologic methods for follow-up will be used, including an unbiased corroboration of major cardiac outcomes and complications. Resource use patterns and administrative data will be available for assessment of the cost implications of this pathway.

... CONCLUSIONS ...

In 1999, HCA initiated a coordinated effort to improve the diagnosis of CAD and to target women who should receive aggressive risk factor modification and referral to cardiologists. Current strategies aimed at education and intervention of women at risk for CAD have been lacking. Preliminary results from limited sampling reveal that a substantial proportion of women are at risk for ischemic heart disease and in need of further evaluation. The HCA disease management program for improved detection and treatment of women at risk for CAD includes employee risk factor screening; citywide health risk assessment; nationwide educational programs for clinicians, staff, and consumers; and a dedicated outcomes assessment program for tracking women at risk for CAD. It is hoped that programs such as these can provide an improved venue for optimal care and improved outcomes for women served by HCA facilities.

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